

CLIMATE CHANGE

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ABSTRACT

The Intergovernmental Panel on Climate Change (IPCC), the apex referee for scientific evidence on the impact of global warming, released a special report on Wednesday, highlighting the dire changes occurring in oceans, glaciers, and ice deposits on land and sea, with representatives from nearly 200 nations attending the United Nations Climate Summit in the United States. According to a summary of the report that was made available to policymakers, "the ocean is projected to transition to conditions that are unprecedented over the 21st century, with increased temperatures, further ocean acidification, marine heat waves, and more frequent extreme El Nio and La Nina events." Based on current projections of global greenhouse gas emissions, the report summarizes the disastrous effects of warming and brings up to date the scientific literature that has been available since the IPCC's comprehensive 5th Assessment Report was released in 2015. Since 1970, it is almost certain that the ocean around the world has warmed unabated and absorbed more than 90% of the climate system's excess heat (high confidence). The rate of ocean warming has more than doubled since 1993. According to the report, marine heat waves have probably doubled in frequency and intensity since 1982.

Keywords: Climate Change, IPCC, Scientific Literature, Greenhouse Gas Emissions, Policymakers.

Introduction

From the North Pole to the South Pole, the planet is warming. The global surface temperature has increased by more than 1.6 degrees Fahrenheit (0.9 degrees Celsius) since the 1990s, with even greater increases in the Polar Regions, which are particularly vulnerable. In addition, the effects of rising temperatures are already manifesting themselves rather than waiting for a distant future. Animals are moving around as a result of the heat melting sea and glacier ice and altering precipitation patterns. Although scientists prefer to use the term "climate change" to describe the complex shifts currently affecting our planet's weather and climate systems, many people consider global warming and climate change to be synonymous terms. Extreme weather events, shifting wildlife populations and habitats, rising sea levels, and a variety of other effects are all part of climate change. As humans keep adding greenhouse gases that trap heat to the atmosphere, all of these changes are starting to appear

Between 1970 and 2017, the Southern Ocean contributed 35%–43% of the total heat gain in the upper 2,000 m of the global ocean. Between 2005 and 2017, the Southern Ocean contributed 45%–62% of the total heat gain.

Following the Special Reports on Global Warming of 1.5°C (SR1.5) and Climate Change and Land (SRCCL), the "Special Report on the Ocean and Cryosphere in a Changing Climate" was prepared in response to a decision made in 2016 by the IPCC Panel to prepare three Special Reports.

Another phenomenon is Climate Change Mitigation, which refers to efforts to cut down on or stop the release of greenhouse gases. Utilizing new technologies and renewable energies, making older equipment more energy efficient, altering management practices or consumer behavior, and so on are all examples of mitigation measures. It can be as simple as redesigning a stove design or as complicated as a city plan. From high-tech subway systems to paths and walkways for bicyclists, efforts are underway worldwide.

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Economic Survey 2018: Climate Change Adversely Affecting Agricultural Yields

- Climate change could reduce annual agricultural incomes by 15-18% on average, and up to 20-25% for unirrigated areas, in the long term.
- On average, annual rainfall has decreased by about 86 mm in the last three decades.
- The impact of temperature and rainfall is only felt in the extreme—when temperatures are much higher and rainfall is significantly lower.
- The proportion of dry days (rainfall less than 0.1 millimeters per day) and wet days (rainfall greater than 80 millimeters per day) has steadily increased over the past decade in Kharif, while Rabi has seen a decrease of 33 millimeters per year.

Efforts to Reduce Emission

The Paris Agreement, a legally binding international agreement on climate change, is one such effort. On December 12, 2015, it was approved by 196 Parties at COP 21 in Paris, and on November 4, 2016, it went into effect. The reduction in global warming from pre-industrial levels to well below 2 degrees Celsius is the objective. Countries aim to reach a global peak in greenhouse gas emissions as soon as possible to achieve a climate neutral world by the middle of the century in order to achieve this long-term temperature goal. For the first time, a legally binding agreement binds all nations to ambitious efforts to combat climate change and adapt to its effects, making the Paris Agreement a landmark in the multilateral climate change process.

Anthropogenic emissions of greenhouse gases, particularly carbon dioxide, have been the focus of international efforts. However, disagreement regarding the extent to which land carbon sinks should be taken into account when meeting these reduction commitments has hampered efforts to commit nations to reducing their emissions through ratification of the Kyoto Protocol from 1997.

There is every reason to believe that renewable energy will be successful in the fight against climate change. It is one of our most powerful tools. It seems as though investments in renewable energy hold back efforts to combat climate change. This is not true at all. Additionally, as they replace emissions from fossil fuels, renewable technologies can increasingly save customers money. Over the past ten years, the growth of wind and solar power as well as significant cost reductions have been unabated. Renewable energy is becoming increasingly competitive with fossil fuels across the nation, and prices are rapidly falling. New renewable energy is already less expensive than continuing to operate fossil fuel-fired or nuclear power plants, both of which are polluting and inefficient.

In point of fact, the investment firm Lazard estimates that, since 2009, the costs of producing electricity from solar and wind have decreased by 58% and 78%, respectively. Cost trends are expected to continue, and the recent extension of federal tax credits for renewable energy is expected to accelerate wind and solar growth over the coming years. By 2021, capacity is expected to double from 2015 levels. Renewable energy and clean energy options like increasing energy efficiency and storing energy for later use will help pave the way if carefully planned.

Insulation is a form of heat flow resistance that can be used to save energy. Heat naturally moves from a warmer area to a cooler one. In cold weather or climates, one can lessen the heat loss from a building by installing insulation, while in warmer climates, one can lessen the heat surplus. There are a number of advantages to insulating a home, including reduced energy consumption, reduced expenses, and improved comfort. Split incentives, relatively high investment costs, and the time and effort required to realize the energy savings may be barriers to energy savings measures. In cold climates, there are a number of different kinds of insulation, each with its own technical characteristics and financial costs and benefits. Most of the time, one of the most cost-effective ways to save energy is to install insulation.

According to scientists in an article that was published on Yale Environment 360, reengineering technologies, which include managing solar radiation and removing carbon dioxide and other greenhouse gases, are gaining traction as the potential last resort to keep warming below a manageable level of 2 degrees Celsius.

According to this final installment, which is focused on reducing the effects of climate change, in order to keep global warming below the 2°C (3.6°F) threshold that was agreed upon by governments around the world at a meeting in Copenhagen in 2009, greenhouse gas emissions in 2050 will need to be 40 to 70% lower than they were in 2010. They will either need to be at zero by the end of the century, or they may even require removing carbon dioxide from the atmosphere—a controversial proposition.

The scientists who wrote the report looked at about 1,000 different ways to reduce greenhouse gas emissions by using technologies that would capture and store carbon underground, increase energy efficiency, and reforestation to do so. The report stated that the necessary efforts would likely differ from region to region, country to country, and state to state. This is a key question, and how to do so while minimizing the impact on economic growth and poverty reduction is a key consideration.

Significance of Mitigation Measures

- To prevent significant human interference with the climate system and guarantee sustainability
- To stabilize greenhouse gas levels within a reasonable amount of time
- To permit ecosystems to naturally adapt to climate change
- To guarantee that food production is not threatened
- To enable sustainable economic development

Efforts and Significance for Adaptation

Efforts

- Significant changes to the infrastructure: In order to better deal with floods and stormwater, improve water storage and use, and build flood defenses against rising sea levels, water-permeable pavements are installed.
- Prepare for high temperatures and heat waves: enhancing the quality of road surfaces to withstand higher temperatures and gaining global agreement to address the issue of climate change-related refugee migrations, recognizing, comprehending, and advancing climate-resilient agriculture. Taking advantage of any potential advantages brought about by climate change, such as longer growing seasons or higher yields in some regions.

Shifts in behavior like people using less water, farmers planting different crops, and more homes and businesses buying flood insurance are all examples of these shifts.

Significance

- Adaptation can assist in controlling the effects of:
 - Flooding at the coasts and droughts on land,
 - The decline of marine species as a result of ocean acidification
 - The disruption of long-term weather patterns that have shaped global agriculture
 - Can reduce vulnerability by increasing adaptive capacity or lowering sensitivity.
 - Can make it possible for populations to take advantage of opportunities presented by climatic shifts, such as cultivating new crops in previously unsuitable locations.
- **International Solar Alliance**
 - The International Solar Alliance (ISA) is a group of 121 nations founded by India. The majority of these nations are sunshine countries and are located either entirely or partially between the Tropics of Cancer and Capricorn.
 - The alliance's primary goal is to promote the effective use of solar energy to lessen our reliance on fossil fuels.
 - With France's help, India has asked other nations to make infrastructure for solar projects easier to implement.
 - The alliance has committed \$1 trillion in investments and has pledged to lower the price of solar power for inaccessible and remote communities.
 - The alliance will support India's efforts to produce 175 GW of renewable energy and 100 GW of solar energy by 2022.

Conclusion

As a result of the aforementioned data, we can conclude that reckless and egotistical human behavior has a negative impact on climate change. This unfortunately continues to rise. We must be responsible and take the necessary steps to prevent further climate change. Even though the actions taken by governments and other institutions around the world appear to be ambitious, as citizens, we should cooperate with them and abide by them to ensure that climate change does not have any effect on us. We won't have the resources we need to survive and enjoy a comfortable life if the temperature of

the earth continues to rise at this rate. If humans could stop global warming, it would help make the world a better place for everyone and bring down the high temperatures we have now. Everyone should be aware that climate change is a global problem, and as responsible global citizens, we should make sure that the lives of our children and grandchildren do not suffer as a result. Adaptation aims to lower the risks posed by the consequences of climatic changes, such as sea-level encroachment, more intense extreme weather events, or food insecurity, while mitigation addresses the root causes by reducing greenhouse gas emissions. To address climate change holistically, both measures are equally important.

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